

Exploring Website Evaluation Criteria using the Repertory Grid Technique:

A Web Designers' Perspective

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ABSTRACT

Businesses today are increasingly creating a compelling presence on the World Wide Web. This phenomenon is projected to sustain in the near future. However, many retailers are unable to capture their desired markets due to the lack of a comprehensive set of criteria for building effective business-to-consumer (B2C) websites. This study aims to investigate web designers' perceptions of an "effective" website. Twenty web designers were interviewed using Kelly's Repertory Grid Technique in order to elicit factors that they consider important when designing or developing B2C websites. Using grounded theory approach, these elicited data were then classified into 14 meta-categories. The intensive nature of the interviews eventually gave rise to a comprehensive framework that broadens the base of existing web evaluation literature. This framework is based on an adapted Technology Acceptance Model with the 4 dimensions of Perceived Ease of Use, Perceived Usefulness, Perceived Playfulness and Attractiveness.

Keywords: website evaluation, repertory grid technique, Technology Acceptance Model, Flow Theory, Human-Computer Interaction

1. Introduction

Research has suggested that poor web-design is turning customers away (Amato-McCoy, 1999). In response, organizations have sought to assess their Web presence through evaluation of their websites and identification of potential problems. However, research on website evaluation to date, has been highly fragmented.

Firstly, it is largely user or customer-oriented (Wang et al., 2000, Bell and Tang, 1998, Whyte et al., 1997, Spink, 2002, Agarwal and Venkatesh, 2002). Users' views have been studied more extensively because serving users' needs is the primary objective of websites in cyberspace (Bell and Tang, 1998, Dragulanescu, 2002, Whyte et al., 1997, Day, 1997). Research has generally placed less emphasis on what web designers consider are important attributes of effective websites.

Secondly, existing research often focus their studies on selected aspects of web design which are deemed more important (Aladwani and Palvia, 2001), thereby failing to address website's effectiveness in its entirety. For instance, with the emergence and widespread acceptance of Human-Computer Interaction (HCI) (Hartson, 1998), huge emphasis has been placed on studying websites' usability (Agarwal and Venkatesh, 2002, Cockrell and Jayne, 2002, Hornbaek and Frokjaer, 2001, Frokjaer et al., 2000), thus neglecting other qualities such as visual attractiveness.

Finally, most website evaluation research methodology is plagued by one other major drawback: that of having pre-determined structures. Examples include the use of pre-structured questionnaires to collect data for analysis (Bell and Tang, 1998, Spink, 2002, Agosto, 2002, Ranganathan and Ganapathy, 2002, Teo et al., 1999) and the use of scripted actions that govern the way participants walkthrough a website in a simulated or laboratory environment (Agarwal

and Venkatesh, 2002, Cockrell and Jayne, 2002, Frokjaer et al., 2000, Hornbaek and Frokjaer, 2001, Hallahan, 2000). Attributes and constructs used in these pre-structured questionnaires are predetermined prior to the start of the study. These methods can limit the scope of information obtained as researchers explore specific selected aspects of web design.

The objective of this study is therefore to investigate website evaluation from the perspective of web designers. It attempts to answer the question “What factors do web designers consider important when designing or developing effective B2C websites?” To circumvent the problem of using pre-determined structures, this research applies an inductive approach, the Repertory Grid Technique (RGT), to elicit a comprehensive set of B2C e-commerce website evaluation constructs and their definitions based on the experiences of web-designers. The application of the RGT has gained some attention recently in the Information Systems (IS) field (Tan and Hunter, 2002, Hunter and Beck, 2000, Whyte et al., 1997) and is comprehensively discussed in Tan & Hunter (2002). Grounded in Kelly’s Personal Construct Theory (Kelly, 1955), the RGT approach generates a large amount of in-depth, qualitative and narrative information relating to a web-designer’s explanation of a construct elicited. Detailed comments recorded on the constructs provided descriptive support and subsequently are analyzed to identify emerging themes. These common themes derived will represent what web-designers perceive contributed to the design of an effective website.

This research has the potential to contribute to research and practice in three ways. First, in terms of research contributions, this study provides a comprehensive set of web evaluation constructs that can be tested for validity in future research and thus facilitates understanding of these constructs formed by web-designers. An enhanced understanding will guide future research

on issues such as matching of what web users want and what the web-designers provide through their designs so as to uncover any discrepancies between the two.

Second, this study also facilitates our understanding of how RGT can be applied to research in the IS field. Furthermore, RGT is less widely used in IS research. In particular, it has not been employed in any web-design research in the past as most adopted the interview and survey approaches (Benbunan-Fich, 2001, Card et al., 2001, Chao et al., 1999). Thus, our study will be one of the first to use RGT to advance our understanding of research in web-design.

Third, in terms of practice, this study will be of value to web-designers. It helps establish guidelines in building effective B2C websites from the rich responses elicited using the RGT. This will allow web-designers to develop websites that can more effectively attract and retain customers. In addition, these attributes can aid companies providing web-designing solutions or commercial companies that own websites in designing appropriate metrics for collecting feedback pertaining to user acceptance of their websites.

2. Literature Review

2.1 Theoretical lenses applied to website evaluation

We reviewed the existing stream of research on website evaluation based on our search of academic journals and publications over the last 7 years, focusing on empirical studies that look at the evaluation of websites. We used online databases like ABI/Inform and Academic Search Premier. Keywords used included “website evaluation”, “website usability” and “website effectiveness”. Additional references used were ones cited in resulting core articles.

The literature review revealed the use of three common theoretical lenses in the research to date. These lenses have been used to guide researchers in coming up with the evaluation criteria. The first is the Technology Acceptance Model (TAM) (Davis, 1989). Studies that uses

TAM as a framework or guide to website evaluation include Lee and Lee (2003), Koufaris (2002), Schubert and Dettling (2002) and Benbunan-Fich (2001). These studies use the TAM framework to look at factors affecting the acceptance of websites. However, we find that for these studies, the measures for and criteria affecting PEOU and PU are different even though they deploy the same framework.

The second lens is the application of flow theory to the evaluation of websites, either as a standalone theory (Koufaris, 2002) or used in conjunction with TAM [48] for website evaluation. Flow has been defined as “the holistic sensation that people feel when they act with total involvement” (Csikszentmihalyi, 1975). Many studies also looked at perceived playfulness or perceived enjoyment, as part of the framework for their analyses (Katerattanakul, 2002, Liu and Arnett, 2000). Perceptions of playfulness and shopping enjoyment originated from flow theory, which argues that when a person is in a flow, they shift into a mode of experience and become absorbed in their activity. Therefore, websites that promotes playfulness and shopping enjoyment are likely to be more engaging to the consumers of the website.

A third lens that has been used to examine website evaluation is the Human-computer Interaction (HCI) lens, whereby the notion of usability is a key theme in the HCI literature (Agarwal and Venkatesh, 2002, Palmer, 2002). The theoretical foundation for HCI studies are grounded in psychology and cognitive science. Many studies looked at design features that will help improve the usability of websites, including attractiveness and interactivity (Skadberg and Kimmel, 2003, Lindgaard and Dudek, 2003).

Despite the differences in the theoretical lenses applied to web evaluation studies, there were commonalities in their findings. A case in point is Agarwal and Venkatesh (Agarwal and Venkatesh, 2002), which examined usability of websites via the HCI lens. The usability

categories in that study included ease of use, and “content”, which the authors argued was akin to “perceived usefulness”. Both perceived ease of use and perceived usefulness are TAM constructs. Additionally, as we have mentioned earlier, there is no consistency on the measures for and criteria affecting similar constructs using the same framework, such as those for PU and PEOU. Finally, for the majority of research that we have reviewed, there is no theoretical framework to guide the criteria selection. One common approach to the selection of criteria is through a review of published academic and/or practice-oriented literature in the general area of website evaluation (Kim et al., 2003). Because the criteria are not derived from theory, these researches are often fragmented: there are no theoretical justifications for the criteria selections and no assurances that the selected criteria are comprehensive and relevant to the measurement of website effectiveness. The Repertory Grid Technique that we will describe in the next section will help in the selection of appropriate criteria and addresses these problems as well as those mentioned earlier on.

2.2 Repertory Grid Technique

Kelly devised the Repertory Grid interviewing technique (Carver and Scheier, 1988, Pervin, 1989, Fransella and Bannister, 1977) in 1955 to explore personal constructs systems of his patients. RGT involves the generation of a lists of concepts (*elements*) about things or events to be studied and the forming of attributes (*constructs*) based on the list of concepts (Zhang and Chignell, 2001).

The most indicative definition of a “construct” says it is “*a way in which two or more things are alike and thereby different from a third or more things*” (Fransella and Bannister, 1977). Beail (Beail, 1985) has referred personal constructs as the “essence” of Kelly’s PCT. The

RGT is a flexible, yet systematic methodology that integrates both qualitative and quantitative analysis (Beail, 1985, Marsden and Littler, 2000) on a given domain of discourse.

RGT has been employed widely in information systems research (Whyte et al., 1997, Zhang and Chignell, 2001, Schamber, 2000, Hall et al., 2001, Debreceeny et al., 2002, Wagner et al., 2002, Hassenzahl, 2000, Hunter and Beck, 2000, Tan and Hunter, 2002, Latta and Swigger, 1992, Moynihan, 1996, Phythian and King, 1992), as well as in the management field (Easterby-Smith and Thorpe, 1996, Hodgkinson, 2002, Sparrow, 1999, Cassell et al., 2000). In the field of education, student motivation and professional development of teachers were investigated (Christie and Menmur, 1997) (Elbogen et al., 2001) (Cherubini et al., 2002). RGT has also employed in research pertaining to trust (Ashleigh and Stanton, 2001).

The use of RGT is suitable for research in the area of website evaluation for the following reasons. Firstly, it addresses the criticism that existing theories and methods are deemed unsatisfactory in discovering the nature and form of individual subjectivity (Hirshchman, 1986). In particular, the process of meaning construction, the nature of individual and meaning systems and ways of representing these phenomena through naturalistic research strategies will require a method that poses no restrictions to allow maximum response (O'Shaughnessy and Holbrook, 1988). As mentioned earlier, RGT is a qualitative approach that aims to accomplish this.

Secondly, RGT is a method that avoids the use of *a priori* categories. The technique does not impose pre-determined structures. Instead, the categories emerge from the data through the identification of emerging themes (Tan and Hunter, 2002, Hunter and Beck, 2000, Whyte et al., 1997).

Thirdly, this technique allows participants to express their views in their own words and yet, due to its systematic nature, allows researchers to probe deeper into the responses to derive

richer information. This facilitates better understanding of participants' perception and aids in the analysis of data.

Lastly, the data obtained from RGT is rich enough to enable a thorough examination of content elicited by each individual's construct system (Dick and Jankowicz, 2001, Dillon and McKnight, 1990, Mcknight, 2000, Hunter and Beck, 2000, Hassenzahl, 2000).

3. Research Methodology

3.1 Sampling

The sample of intended subjects (web-designers) was drawn from a listing of 1012 software retailers published in the e-Source Directory¹ (2001). Given the intensive nature of the RGT, a relatively small sample size (about 15 to 25 subjects) is often sufficient in eliciting a comprehensive list of constructs for the purpose of a study (Ginsberg, 1989, Dunn et al., 1986, Tan and Hunter, 2002). A modified systematic sampling procedure was applied to the listing, starting with a random record and applying a selection interval of 5. A total of 20 web-designers agreed to participate in this study.

3.2 The Repertory Grid Interview Process

Six pilot interviews were conducted with university students with web design experience. As a result, we were able to standardize the RGT interview process and confirm our procedures for the actual interviews. Table 1 outlines the interview process and duration of each stage in the interview.

¹ This is a directory containing vendor listings of services, software and hardware retailers.

TABLE 1: SUMMARY OF THE INTERVIEW PROCESS

DURATION	ACTIVITY
BEFORE INTERVIEW BEGINS	
First 5 minutes	Introduction
10 minutes (OPTIONAL)	Allow respondent to refresh/browse through the 6 stipulated websites
INTERVIEW BEGINS	
5 minutes	Give overview of whole interview process. Provide examples to illustrate tasks respondent is required to do.
40 minutes	ACTUAL INTERVIEW: Triading Laddering Rating of Constructs
INTERVIEW ENDS	
5 minutes	Administrative matters: Respondents fill up demographic profile.

There are 3 steps to the RGT – element selection, construct elicitation (involving triading and laddering), and then the rating of elements along each elicited construct. These steps are discussed next.

3.2.1 Element selection

The first step is the selection of the elements to be included in the study. Elements represent the domain of investigation. The relevant elements for our study are B2C websites. A minimum of six elements is required in order to provide sufficient triads for use in the second step. Based on Nielsen/NetRatings Singapore Internet Audience Activity Report for April 2000 (Osman, 2002), the websites included are *Yahoo!*, *MSN*, *Singapore Telecom*, *Pacific Internet*, *AOL websites* and *Lycos*. One week prior to the interviews, we emailed the participants general

details of the interview and requested them to surf the six websites to familiarize themselves with the sites. Just before the start of the interview, we confirmed with the participants that they have surfed the 6 stipulated websites. We also gave the participants an option to browse unscripted, the websites for up to 10 minutes at their own workstations before the interview commenced if they wished to do so. At the commencement of the interview, an overview of the study was provided to the participant. To reduce interviewer's bias, all instructions were read from prepared notes to ensure that all subjects received the same set of instructions.

3.2.2 Construct elicitation

Construct elicitation aims to identify meanings, in the form of bipolar constructs, that subjects attach to the elements (Dalton and Dunnett, 1992, Marsden and Littler, 2000). Two interviewing methods, “*triading*” and “*laddering*”, are employed to achieve this. *Triading* (Kelly, 1955) involves the participant selecting three elements (websites) at random. The participant is then asked to identify, how two of them are similar and different from the third, in terms of what s/he, as a web-designer, consider important when designing or developing websites. The labels for similarity and difference identified form a bipolar construct eg. good navigation – poor navigation. The “*laddering*” method is then used to elude in-depth explanations of the bipolar construct. For example, the respondent might be asked which pole of the construct they prefer (good or poor navigation), or how and why they think that particular aspect (Marsden and Littler, 2000) affects the websites. The elicitation process is then repeated to identify more constructs, until the participant cannot add any new constructs to the ones s/he already named earlier.

3.2.3 *Rating of elements along constructs*

At this stage of the interview the participant is asked to rate all elements based on the attributes elicited. Each element is rated independently, on a scale of 1 to 7, where 1 represents the construct pole, and 7, the contrast pole. By using a rating scale, the subject is accorded greater freedom when sorting the constructs as they are not forced to take side with either the construct or its contrast pole (Beail, 1985).

To conclude the interview, participants were requested to fill up a demographic sheet and indicate their relevant expertise as web-designers.

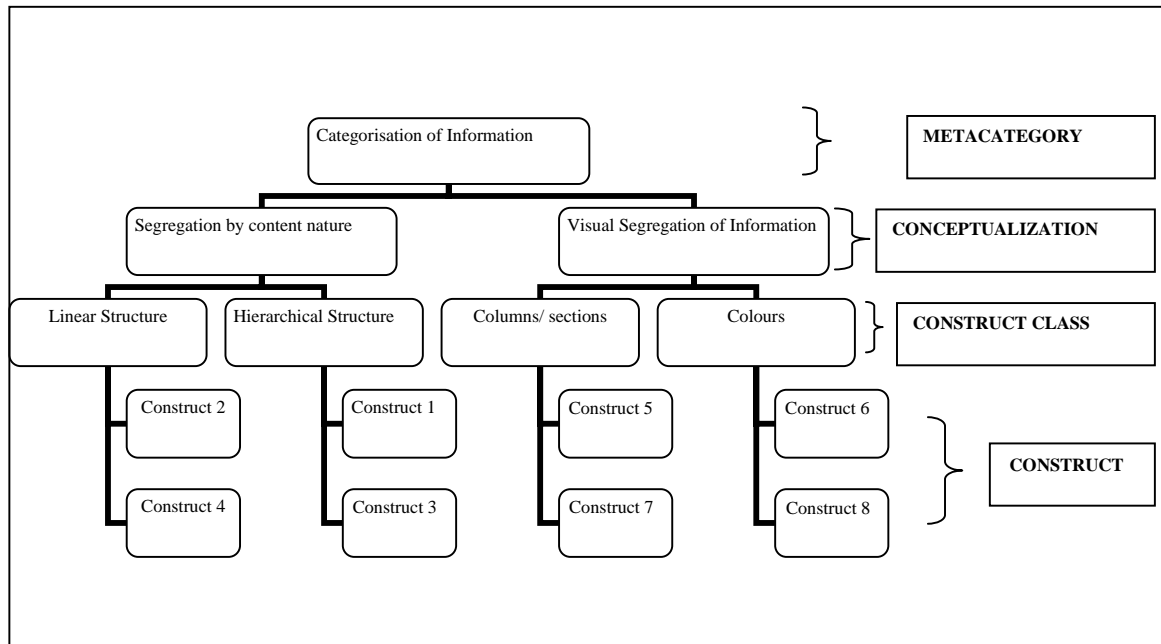
3.3. **Analysis of Data**

Using RGT, participants were generally given vast freedom in determining the perceived similarities and differences within each triad, and providing personal interpretations pertaining to the constructs elicited (Hunter and Beck, 2000). This section describes how we analyzed and classified our rich findings into common themes. A walkthrough using examples from our data will be presented. We used a three-layer classification scheme to categorize the data collected, namely **construct class**, **conceptualization** and **meta-category** (see Figure 1). The interpretations and labels we assigned to each of these layers were informed by literature on website evaluation.

In order to facilitate classification of the constructs into conceptualizations, we grouped the constructs into classes. Conceptualizations were formed from the construct classes. Both poles of the constructs were used to define the conceptualizations, hence reflecting construct

bipolarity (Dick and Jankowicz, 2001). Meta-categories of conceptualizations were derived using the grounded theory approach (Strauss, 1987).

FIGURE 1: HIERARCHY OF CATEGORIES



4. Results and Analysis

Eleven males and nine female web designers participated in this study. They were mostly between 21-30 years of age and had more than 2 years experience in web design. On average, all participants surf the Internet several times a day for up to 5 hours each time.

Forty-six conceptualizations were obtained from the identified construct classes and fourteen meta-categories were derived using grounded theory approach. Table 2 presents a list of the 14 meta-categories, their underlying conceptualizations, construct classes and a sample of the constructs that make up the categories.

Table 2: Meta-categories, Conceptualisations and Construct Classes

Meta-category	Conceptualisation	Construct class	Construct example
Content/ Information	Scope of information	Wide variety / General information	- wide variety of content to attract larger audience
		Specific Information	- information based on user interests
		Specific Corporate Information	- provides information on company and products for corporate website (target specific audience)
	Quality of information		- should not have so much variety that quality of information suffers (too much broad but no quality)
Updates	Information/ content/ feature update	Frequency of updates	- frequent updates makes website more user-friendly, attract users to visit more frequently.
		Characteristics to facilitate frequent updates	- use of pre-defined design that allows frequent updates, changing content only for each update
	Design updates		- use of new, up-to-date design, graphics always changing
Navigation	Position of menu/ navigation bar	Side Navigation Bar	- uses side navigation, creates larger space and use of scroll bar, allows more categories
		Menu	- putting "quick launch" on top left corner as page refreshes from top to bottom and left to right, user will see this portion first and can click before the whole page finishes loading, reduce waiting time.
		One-Page navigation	- listing all links or categories on one page allows users to click directly on the page instead of going into many layers to get what they want
	Search function	Scope of search	- offer global search engines - search engine within their own corporate website
		Quality of search function	- search engines to generate good and effective keywords to help users identify information they need, more relevant searches, direct keywords.
	Rollover effect		- have clear icons, and roll over mouse effect text links
	Links	Extent of Use	- clear cut, focused, not confusing
		Text Links	- use of underlined text links to induce user to click
		Graphics Links (Menu tabs/ icons)	- very clear interface, buttons and tabs, creates good navigation and improve usability, can find things easily, user-friendly
	User friendliness		- more user friendly, has clear navigation, tries to make customers surf and get what they want
Categorisation of information	Segregation by Content Nature	Linear Structure	- categorises their content into different subjects and topics such as regions, products and business functions where users can find information more easily
		Hierarchical Structure	- structure is hierarchical for website that provide more detailed information, with links and branches, and many levels to present information with more depth vs. broad and shallow structure for website that provide brief and concise information with little details or layers, straight to the point)
	Visual Segregation of information	Columns/Sections	- sections are clearly defined, not cramp
		Frames	- use of frames to section content for each item (eg. Large image, a lot of content, a summary of thee content)to enable layout of content have more impact
		Colours	- use of colour to segregate/categorize information into sections make reading easier, make finding and looking for information easier
	Extent of Use		- should not have excess categories as users will not know where to click on
Down-loading Time			- faster loading time if website meant for business user as they value time and want to have access to information more quickly (eg. More text-based(links) to reduce loading time of graphics)

Meta-category	Conceptualisation	Construct class	Construct example
Graphic Usage	Extent of usage		- graphic-intensive
			- catches more attention than text
	Organization of graphics		- neat in terms of graphics arrangement
	Quality of graphics		- Quality graphics: visible and sharp images.
	Use of graphics to portray website image		- use more graphics if website were to portray more fun image.
	Functional use of graphics		- Use of graphics to give hints as to what to expect from a link so that user will be less confused.
			- use of graphics link for information that do not change so much as graphics are harder to update frequently
Text Usage	Extent of use	Text use due to web's nature	- more text-base for website to look more serious and business-like to attract more working people--match objective of company and purpose of website.
	Functional use of text	Text use to meet users' needs	- targeted more to users who are text-savvy
		Text use for easy viewing	- should not have too much as it is less user friendly.
			- use of text links more practical for information that changes/requires update more frequently (ie. easier to change text)
Visual Appearance/Look	Simple and practical		- Very clean, good and neat: not messy so users can search easily
	Professional		- more polished, powerful, more of third generation design
	Clean/ Neat		- neat: follow a layout, are more appealing to most people
Layout and Space usage	Extent of space usage for features		- use good sense of space, wide space, more comfortable to look at, visually clearer, main focus where users identify what they want
	Consistency in Layout/design		- similar layout throughout all pages
	Position of features		- to have prominent search features presented on top of the page for portal websites and corporate information more prominent and eye-catching for corporate website
Presentation of information	Font size and type		- use of same font sizes for information with same importance (eg. Same font size for headlines)
	Association between text and background colour		- use of text of dark colour against white background to allow user to view information more easily
	Display of Information		- all information at one glance is easier for users: no need to scroll left and right, technically better
			- no excessive use of flash, pop-ups, banners, advertisements that can be very annoying - design not trying to hard sell/push
Colour Usage	Choice of colours	Colour use to portray website image	- use of a colour theme which help user to recognize the site, simple colours pleasing to the eye should be used
	Consistent use of colours		- Consistent use of colours; should not use too many colours (eg. Use of same colour for all text)
	Emphasis through colour usage		- making use of colours to attract attention to search function which is the selling point of the company
Headlines	Extent of use		- bringing out headlines and structures so that information will be obvious to users is important
	Hint on content		- hints/short description to allow users to know what to expect within a certain link can lead to higher likelihood of user clicking on the link.
	Portray website image		-display headlines or taglines to help portray website or company image, purpose and focus (eg Taglines denotes that website solely on business)
Advertisements/Popup/Animation	Extent of use		- advertisements should not be flashing as will be very distracting
	Nature of advertisements/animation		- Design with stronger corporate identity through colours and logo (eg. Singtel uses red and logo throughout website) so as to make user more comfortable and know that they are still surfing the site
Establishing Website's Identity	Use of visual presentation		-similar design and layout throughout the pages to create a strong identity with the users
	Consistency	Within the website	- synchronizing website with other forms of corporate media or ads to create identity, very captivating.
		With other forms of media	- gives a more customer feel and appears "friendly and helpful" with people images
	Image portrayed		- frequent updates makes website more user-friendly, attract users to visit more frequently.

The 14 meta-categories and their definitions are presented in Table 3.

Table 3: Definitions of the Meta-Categories

Category	Definition
Graphics Usage	Refers to the purpose for which they are used and extent of usage, including the quality of graphics and how they are being organised
Text Usage	Relates to the purpose of using a text-based interface
Content/ Information	Mainly the scope (wide or specific) and quality of information
Updates	Design considerations with respect to websites that require updating
Layout/ Space Usage	How web space is utilised to present the features and functions across the pages within the website
Presentation of information	Concerns the implications of using colours, fonts and display styles to present information
Headlines	Covers the objective and extent of headline usage
Categorisation of Information	Refers to ways of grouping information on the pages in order to facilitate reading
Navigation	The features used in designing the site that facilitates transition from page to page
Colour use	Concerns the usage and choice of colours used
Visual Appearance	How the website looks and the impact it effects
Advertisements/ Pop-ups/ Animation	The purpose and extent of usage of such features
Downloading Time	Factors in designing that impacts speed of downloading
Establishing Website's Identity	Various methods designers use to portray its unique image

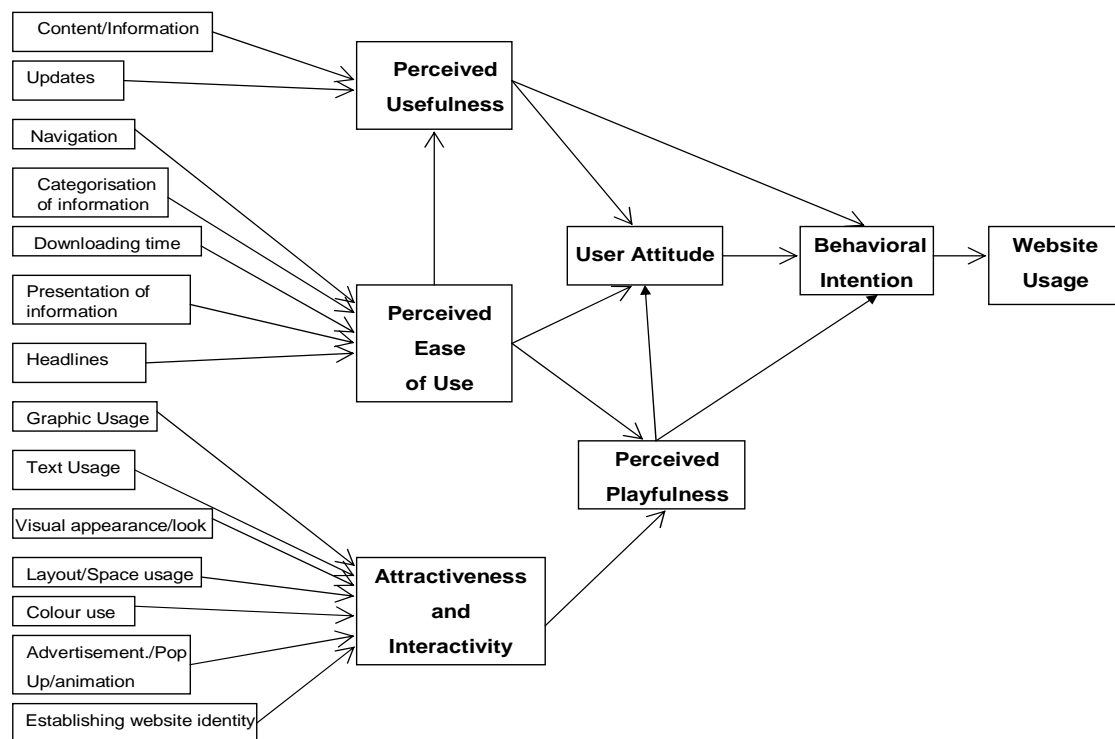
5. DISCUSSION

From above, we have identified the set of criteria designers consider when evaluating websites. The findings of this study (i.e., meta-categories, conceptualizations and construct classes) represent a comprehensive list of important considerations web designers should take into account when designing and developing B2C websites.

Additionally, in order to enable the set of criteria to be tested in future studies, and to facilitate an understanding of how our results contribute to increasing user acceptance and

website effectiveness, we propose a framework to encompass these criteria at the meta-categories level. This framework is informed by research in Technology Acceptance Model (TAM) (Davis, 1989) and flow theory (Csikszentmihalyi, 1975, Deci and Ryan, 1985). It also incorporates research from the HCI literature, especially in the area of design of websites. Figure 2 presents the Framework for Website Evaluation.

Figure 2: A Framework for Website Evaluation



In the proposed research model, a set of design factors (the 14 meta-categories of criteria surfaced above) affects perceived usefulness, perceived ease of use and perceived playfulness. The set of causal links in this research model is consistent with Moon and Kim's (2001).

In the research model, we propose that 2 design factors, content/information and updates, are positively related to PU. From the literature, research has indicated that content is a factor

determining usability (Agarwal and Venkatesh, 2002), website quality (Aladwani and Palvia, 2001) and website success (Palmer, 2002). Additionally, information usefulness and information service has been cited as factors affecting PU (Lee and Lee, 2003). As information usefulness is similar to content while information service is similar to updates, this provided support for our proposition that the 2 factors, content/information and updates, are positively related to PU.

In terms of factors affecting PEOU, our model hypothesized a positive relationship between the following 5 design factors and PEOU: navigation, categorization of information, downloading time, presentation of information and headlines. There are some supports for the inclusion of these 5 design factors from the literature. In Agarwal and Venkatesh (2002), for instance, ease of use consist of 3 subcategories: (i) goals, having clear and understandable objectives, (ii) structure, referring to the organization of the site and (iii) feedback, provision of information of progress. In Cox and Dale (2002), ease of use refers to the clarity of purpose, design (for usability during navigation) and communication.

As anticipated, there are many design factors that goes to improving attractiveness and interactivity of the websites. We adopted Skadberg and Kimmel (2003) definition of attractiveness of a Website as the representation's richness and quality and interactivity to refer to the response triggered by the user. In this study, our variable "attractiveness and interactivity" are design factors that will promote richness, quality and response to the website. We categorize the remaining 7 design factors as appropriate graphic and text usage, visual appearance/look, layout and space usage colour usage, advertisements/popup/animation and establishing website's identity as factors affecting attractiveness and interactivity of the design.

In the research model, we propose that perceived playfulness is determined by the attractiveness, interactivity and ease of use of the website. Literature on playfulness and flow

has supported this contention. Skadberg and Kimmel (2003), for instance, found that attractiveness and interactiveness demonstrated a causal relationship with the flow experience.

6. Conclusion

In this study, we translated web-designers' practice into the set of criteria they consider when evaluating websites. The application of the RGT yielded rich and relevant qualitative data from the interviews. The findings of this study (i.e., meta-categories, conceptualizations and construct classes) represent a comprehensive list of important considerations web designers should take into account when designing and developing B2C websites.

A number of companies are offering a range of assessment instruments to appraise e-businesses and their Websites and make comparisons between competitors. These assessments are based on website design and download speed of pages, pricing or access to the Website (Cox and Dale, 2002). The results of this study can aid in providing a checklist for these instruments to assess e-businesses based on the designer's perspective.

The results of this study can also be a resource for the designers of software that tracks and assesses web sites based on a variety of metrics. In response to the market need for assessing web site usability performance, new software have sprouted and are available in the market for assessment of web sites. An example of such a software is WebCriteria (Walsh, 1999) which uses software agents to simulate the end users' experience and analyse information in terms of a web site's load times, accessibility, freshness and composition. However, the collection of the quantitative data by itself cannot improve the website. The improvement will depend on the appropriate interpretation and evaluation of the information derived. In other words, we need to know the appropriate constructs when evaluating a web site in order to design

appropriate metrics for collecting web site usability information as well as to interpret and evaluate the information. This study will help these designers of tracking software towards that end.

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